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| Examination        | Not requested  |
| Title of Invention | Elevator governor which has emergency stopping devicefor up-down-direction |



### Abstract

As to the invention, the lever, the stopping chain, and the ratchet are symmetrically formed in both side surface of the speed governor wheel. And the solenoid switch is adhered to one side of the speed governor wheel and the elevator cage reaches 140% of the rated speed to rising or the falling direction, or the lever adhered to the speed governor wheel in which the solenoid switch operates in the abnormal operation with the electric signal and the elevator cage rotates due to the malfunction of the abrasion of the brake lining or the safety switch is operated and the stopping chain is connected and ratchet is stopped. It is about the elevator governor in which the governor rope is decelerated and stopped by \*\*\* wife and stopping the elevator cage.



### Representative Drawing(s)

Fig. 4



### Keyword(s)

Speed governor wheel.



### Description

※ Brief Explanation of the Drawing(s)

Figure 1 is a front view of the elevator governor having the elevator governor which has emergency stopping device for up down direction according to the invention.

Figure 2 is a rear elevation of the elevator governor having the elevator governor which has emergency stopping device for up down direction according to the invention.

Figure 3 is a disassembled perspective view of fig. 1.

Figure 4 is a drawing showing the characteristic part of the present invention as the disassembled perspective view of fig. 2.

Figure 5 is a plane view of the elevator governor having the elevator governor which has emergency stopping device for up down direction according to the invention.

Figure 6 is a side view of the elevator governor having the elevator governor which has emergency stopping device for up down direction according to the invention.

#### ■ Details of the invention

##### ■ Purpose of the invention

##### ■ The Technical Field to which the invention belongs and the Prior Art in that Field

The invention relates to the speed governor. And more specifically, it is about the elevator governor having the elevator governor which has emergency stopping device for up down direction the lever, the stopping chain, and the ratchet are symmetrically formed in both side surface of the speed governor wheel, and the solenoid switch is adhered to one side of the speed governor wheel and in which the elevator cage reaches 140% of the rated speed to rising or the falling direction, or it operates the lever adhered to the speed governor wheel in which the solenoid switch operates in the abnormal operation with the electric signal and the elevator cage rotates due to the malfunction of the abrasion of the brake lining or the safety switch and the stopping chain is connected and stopping ratchet, and the governor rope is decelerated and stopped with the rope catcher and stopping the elevator cage.

Generally the elevator structure is made of the machine room, hoistway, the elevator cage, the wire rope etc. In the machine room positioned in the top part, the main power switch, the control panel, the winding machine and electric motor, the layer selector, and the speed governor are positioned. And the elevator cage, balance weight, guide rail, guideshoe (guide roller), winding machine rope, governor rope, the emergency shut-down apparatus (safety device), traveling cable, limit switch is positioned in hoistway. Buffer is positioned in bottom.

As to the conventional elevator, in case the speed governor located in the machine room senses the speed of the elevator cage and speed is on the increase over the rated speed, it performs according to the next two kinds of operation. In that way the elevator cage is stopped to force.

With if the speed of the elevator cage reaches 130% of the rated speed, the power supply being discontinued to the first operation and cutting off the power source of the winding machine motor, the winding machine brake is operated and the electrical addressing of elevator is stopped. If the speed of the elevator cage reaches 140% of the rated speed, the pendular adhered to the side of the speed governor wheel following the first operation operates to the second operation with the centrifugal force according to over velocity rotation and lever is operated and the stopping chain is thus connected and ratchet is stopped. And the rope cat wife who is integrally connected in the stopping chain and operates is decelerated and stopped the governor rope. In that way the elevator cage is stopped. And the emergency shut-down apparatus (safety device) which is in the elevator cage bottom part following the second operation operates and the guide rail is grasped to the strong power and the super descent of the elevator cage is stopped.

But accident to the death the operation was limited due to the abrasion of the denaturation of the spring of the speed governor and the mechanical moving element etc. in the point which did not operate in the super descent of the elevator cage in the exact speed and the case where the elevator cage descended rapidly and it operated as to the operation of the emergency shut-down apparatus (safety device) and the second operation, and in that way it had to many people confronting in case the elevator cage rose rapidly over the rated speed and it was impossible to the forced stop and utilized elevator and it was caused by of the accident of being direct break out frequently.

#### ◆ The Technical Challenges of the Invention

Elevator governor having the elevator governor which has emergency stopping device for up down direction overcomes the problem of the prior art, and of this inventor lever, the stopping chain, and ratchet are symmetrically formed as to the speed governor in both sides of the speed governor wheel, and the solenoid switch is adhered to bent with the speed governor one side and in which the elevator cage reaches 140% of the rated speed to rising or the falling direction, or operating the lever adhered to the speed governor wheel in which the solenoid switch operates in the abnormal operation with the electric signal and the elevator cage rotates due to the malfunction of the abrasion of the brake lining or the safety switch, and the stopping chain is thus connected and stopping ratchet, and characterizing to the governor rope be decelerated and stopped by the rope cat wife who is integrally connected in the stopping chain and operates and stop the elevator cage are provided.

#### ◆ Structure & Operation of the Invention

It is made of the speed governor of the present invention, for achieving technical problems is the speed governor wheel housing (1), speed governor wheel (6), the first lever (9) operated by the operation of the centrifugal pendulum (29), (39), pendular (29), (39) adhered to one side of the speed governor wheel (6), the first stopping chain (7) connected according to the operation of the first lever (9), the first rope catcher (20), and the second rope catcher (20'). As to the first rope catcher (20), the first ratchet (12) and the first stopping chain (7) in which the first stopping chain (7) is combined and rotation to one side direction is stopped are connected in the first ratchet (12) in the bond. As to the second rope catcher (20'), the second ratchet (12'), in which the second stopping chain (7') connected due to the solenoid switch (26), which is operated by the generated electric signal in case the winding machine wheel rotates in the other group side of the speed governor wheel (6) in the supply interruption of the winding machine motor electricity source the second lever (9') operating due to the operation of the solenoid switch (26), and the operation of the second lever (9'), and the second stopping chain (7') are combined and rotation to one side direction is stopped the second stopping chain (7') and the second ratchet (12') are connected in the bond.

By sensing over velocity rotation of the speed governor wheel (6) and being made of the pendular (29) operated to the centrifugal force, the first lever (9) connected with the operation of (39), the first stopping chain (7) connected according to the operation of the first lever (9), and the first rope catcher (20) it was caused by and the conventional elevator governor could stop emergency in the case where the fast acceleration to a one-way was generated as to both directions of up and down. As to the first rope catcher (20), the first ratchet (12) and the first stopping chain (7) in which the first stopping chain (7) is combined and rotation to one side direction is stopped are connected in the first ratchet (12) in the bond.

The present invention is to provide the elevator governor having the elevator governor which has emergency stopping device for up down direction that the elevator cage reaches 140% of the rated speed to rising or the falling direction in order to overcome problem, or the solenoid switch (26) operates with the generated electric signal in case the winding machine wheel rotates due to the operation of the elevator cage when the power source of the winding machine motor of the elevator cage is interrupted due to the malfunction of the abrasion

of the brake lining or the safety switch in the abnormal operation due to that is, the operation of the safety switch and stops the elevator cage of the prior art described in the above.

The preferred embodiment about the elevator governor having the attached elevator governor which has emergency stopping device for up down direction according to the invention is hereinafter particularly more illustrated.

Figs. 3 and 4 are the disassembled perspective view of the elevator governor having the elevator governor which has emergency stopping device for up down direction according to the invention.

As shown in Figure 3, as to the speed governor of the present invention, the speed governor wheel housing (1) consisting of the speed governor wheel housing first side (2) in the lower part, speed governor wheel housing second side (3), and speed governor wheel housing third side (4) is formed. The speed governor wheel housing third side (4) and the fixed space are put and the speed governor wheel (6) is perpendicularly combined with the screw nut in the speed governor wheel housing first side groove (5). And the first stopping chain (7) is combined in the stopping chain hole (8) with bolt. The first lever (9) is combined with the pin in the lever hole (10). And the first ratchet (12) is combined in the ratchet hinge shaft (11). The formed ratchet doctor bar punch station (15) is combined with ring in the ratchet pin (13) formed in the first ratchet (12) in the ratchet doctor bar (14). And the ratchet adjusting spring large (16) and ratchet operation spring (17) are combined in the ratchet doctor bar (14) with the screw nut. The pin is inserted into the ratchet adjusting spring large second punch station (21) and rope cat wife punch station (19) to the state where the first rope cat wife (20) in which the rope cat wife punch station (19) is formed is inserted into the ratchet adjusting spring large first punch station (18) formed in the ratchet adjusting spring large (16) and the state is combined. The pin is inserted into the ratchet adjusting spring large third punch station (22) and speed governor wheel housing first side punch station (23) and the state is combined. The power control apparatus mount (24) is formed in the speed governor wheel housing first side (2) top end portion and the power control apparatus (25) is combined with bolt and nut in the power control apparatus mount (24).

As shown in Figure 4, the speed governor wheel (6) is combined with the screw nut in the speed governor wheel housing second side groove (5'). And the link (27) is inserted between the second lever (9') and solenoid switch (26) and it is combined with the pin. The second lever (9') is combined with the pin in the lever hole (10'). And the solenoid switch (26) is combined in the solenoid switch hole (28) by screw. The pendular (29) is combined in the pendular hinge shaft (30). And the second stopping chain (7') is combined in the pendular (29) with the screw nut. The adjusting bolt (32) is inserted into the control bolt hole (31). And the adjustment washer (33), adjusting spring (34), control spring cap (35), adjusting nut (36), (37), control square nut bolt (38) is combined in the adjusting bolt (32) and it is combined with the pendular (39) with the control square nut bolt (38). The pendular (39) is combined in the pendular hinge shaft (40) with the screw nut. And the square head bolt (41) is combined in the pendular (39) with the screw nut. The pendular doctor bar (44) is combined with ring in the pendular (29), and (39) in the respective formed pendular pin (42), and (43). And the second ratchet (12') is combined in the ratchet hinge shaft (11'). The formed ratchet doctor bar punch station (15') is combined with ring in the ratchet pin (13') formed in the second ratchet (12') in the ratchet doctor bar (14'). The ratchet adjusting spring large (16') and ratchet operation spring (17') are combined with the screw nut in the ratchet doctor bar (14'). The pin is inserted into the ratchet adjusting spring large second punch station (21') and rope cat wife punch station (19') to the state where the second rope cat wife (20') in which the rope cat wife punch station (19') is formed is inserted into the ratchet adjusting spring large first punch station (18') formed in the ratchet adjusting spring large (16') and the state is combined. The pin is inserted into the ratchet adjusting spring large third punch station (22') and speed governor wheel housing second side punch station (23') and the state is combined.

Figure 1 is a front view of the elevator governor having the elevator governor which has emergency stopping device for up down direction according to the invention. Figure 2 is a rear elevation of the elevator governor having the elevator governor which has emergency stopping device for up down direction according to the invention. Figure 5 is a plane view of the elevator governor having the elevator governor which has emergency stopping device for up down direction according to the invention. Figure 6 is a side view of the elevator governor

having the elevator governor which has emergency stopping device for up down direction according to the invention.

If the lowering speed reaches 130% of the rated speed, the pendular (39) combined in the pendular hinge shaft (40) takes place in the lowering of the elevator cage with the centrifugal force and the square head bolt (41) formed in the pendular (39) operates the power control apparatus (25) and as shown in Figure 6, the power supply is discontinued with fig. 1, and figs. 2 and 5. The speed of the elevator cage successively reaches 140% of the rated speed, or the pendular (39) more takes place in the abnormal operation with the centrifugal force and the elevator cage operates the first lever (9) due to the malfunction of the abrasion of the brake lining or the safety switch and the first stopping chain (7) is connected and the first ratchet (12) is stopped. And the first ratchet (12) is stopped and the ratchet doctor bar (14) combined in the first ratchet (12) applies the brake on the first ratchet (12) at the same time the first rope cat wife (20) stops the governor rope. In that way the elevator cage is suspended. If the rising speed reaches 130% of the rated speed in the rising of the elevator cage, the pendular (39) combined like operation in the pendular hinge shaft (40) takes place in the lowering of the elevator cage with the centrifugal force and the square head bolt (41) formed in the pendular (39) operates the power control apparatus (25) and the power supply is discontinued. And the second stopping chain (7') generates the electric signal in case the winding machine wheel rotates since the elevator cage operates in spite of the abort of this electric power supply due to the malfunction of the abrasion of the brake lining or the safety switch and in which the solenoid switch (26) operates and which operates the second lever (9') and which is connected in the second lever (9') and which is operated operates and the second ratchet (12') is stopped. And the second ratchet (12') is stopped and the ratchet doctor bar (14') combined in the second ratchet (12') applies the brake on the second ratchet (12') at the same time the second rope cat wife (20') stops the governor rope. In that way the elevator cage is suspended.

#### ■ Effects of the invention

As to the speed governor according to the invention, lever, the stopping chain, and ratchet are symmetrically formed in both sides of the speed governor wheel. The solenoid switch is adhered to one side of the speed governor wheel. In that way the elevator cage reaches 140% of the rated speed to rising or the falling direction, or the elevator cage lets stop compulsory the elevator cage due to the malfunction of the abrasion of the brake lining or the safety switch in the abnormal operation as to not only the falling direction but also the rising direction. In that way the effect of both directions of up and down double safety system is provided concerning in the abnormal operation of elevator.



#### Scope of Claims

##### Claim 1 :

The elevator governor having the elevator governor which has emergency stopping device for up down direction comprising: the speed governor wheel (6); the pendular (29) which is positioned at one side of the speed governor wheel (6) and operates with the centrifugal force in over velocity rotation of the speed governor wheel (6), and (39); the first rope catcher (20): in which the first stopping chain (7) catches the rope bending with speed governor after the first ratchet (12) in the bond is integrally connected in the first ratchet (12): first stopping chain (7) in which rotation is stopped with the bond with the first stopping chain (7): first stopping chain (7) connected with the first lever (9): the first lever (9) operated by the pendular (29), and the operation of (39) and the second ratchet (12'): second rope catcher (20') which is integrally connected in the second stopping chain (7') and in which the second stopping chain (7') catches hold of the rope bending with speed governor in the second ratchet (12') and bond rotation is stopped with the bond with the second stopping chain (7'): second stopping chain (7') connected with the solenoid switch (26): the second lever (9'): the second lever (9') operating with the operation of the solenoid switch (26) is operated by the generated electric signal the winding machine wheel rotates in the power failure of the winding machine motor it is positioned at the other group side of the speed governor wheel (6).



Drawings

Fig. 1

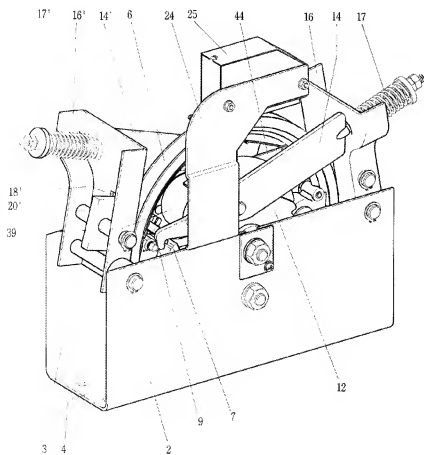


Fig. 2

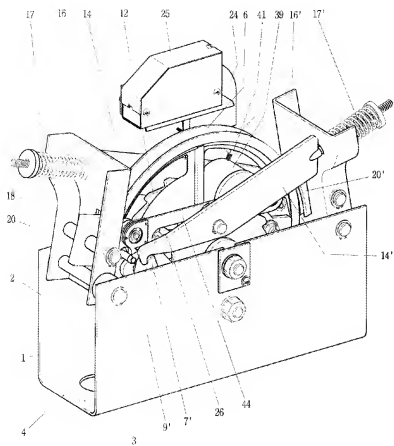


Fig. 3

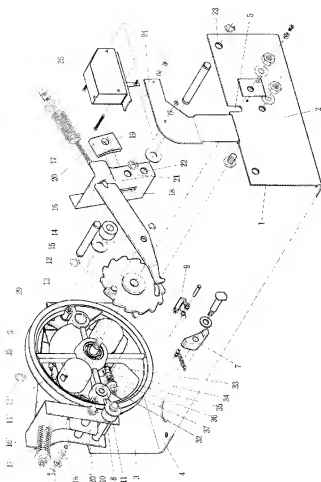


Fig. 4



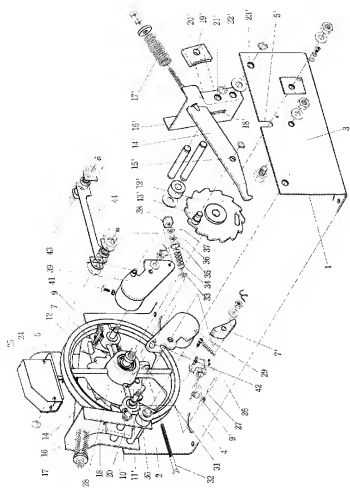


Fig. 5

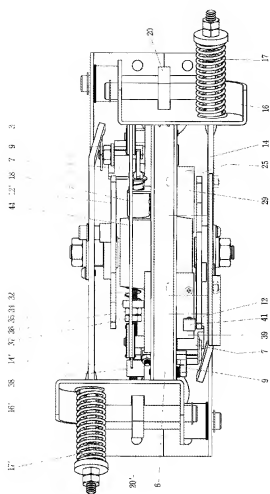


Fig. 6

